

Table 1-1

	varnish	(a) polymer	(b) compound absorbing exposure		(c) quinone diazide compound		(d) inorganic particles			
			compound free of absorption increase during heating at 130-400°C	amount (parts by weight) relative to 100 parts by weight of polymer	compound	amount (parts by weight) relative to 100 parts by weight of polymer	product name	type of inorganic particles	particle diameter (nm)	amount (parts by weight) relative to 100 parts by weight of polymer
Example 1	A	polyimide precursor	coumarin	15	compound (1)	18	OptorakeTR-502	tin oxide - titanium oxide composite particles	5	90
Example 2	B	polyimide precursor	Zislizer O	5	compound (2)	20	OptorakeTR-502	tin oxide - titanium oxide composite particles	5	100
Example 3	C	polyimide precursor	Sumisorb 130	25	compound (3)	19	OptorakeTR-505	titanium oxide particles	10	200
Example 4	D	polyimide precursor	Sumisorb 200	15	compound (4)	24	OptorakeTR-503	silicon oxide - titanium oxide composite particles	8	290
Example 5	E	polybenzoxazole precursor	coumarin	20	compound (2)	20	OptorakeTR-504	tin oxide - titanium oxide composite particles	5	200
Example 6	F	polyimide precursor	coumarin -4	25	compound (2)	20	OptorakeTR-504	tin oxide - titanium oxide composite particles	5	200
Example 7	G	polyimide precursor	coumarin -4	28	compound (1)	18	--	zirconium oxide	5	420
Example 8	H	polyimide precursor	Sumisorb 130	25	compound (3)	19	--	tin oxide - zirconium oxide composite particles	25	85
Example 9	I	polyimide precursor	coumarin	10	compound (2)	20	--	aluminum oxide - titanium oxide composite particles	15	500
Example 10	J	polybenzoxazole precursor	coumarin -4	10	compound (2)	20	--	tin oxide particles	10	120

Table 1-2

	varnish	(a) polymer	(b) compound absorbing exposure		(c) quinone diazide compound		(d) inorganic particles			
			compound free of absorption increase during heating at 130-400°C	amount (parts by weight) relative to 100 parts by weight of polymer	compound	amount (parts by weight) relative to 100 parts by weight of polymer	product name	type of inorganic particles	particle diameter (nm)	amount (parts by weight) relative to 100 parts by weight of polymer
Example 11	K	novolac resin	Sumisorb 130 Sumisorb 140	20	compound (2)	20	OptorakeTR-502	tin oxide - titanium oxide composite particles	5	100
Example 12	L	free-radical polymerized polymer	Sumisorb 200	10	compound (1)	20	OptorakeTR-505	titanium oxide particles	10	140
Example 13	M	polyimide precursor	coumarin-4	10	compound (2)	20	OptorakeTR-502	tin oxide - titanium oxide composite particles	5	100

Table 2

	varnish	(a) polymer	(b) compound absorbing exposure light			(c) quinone diazide compound		(d) inorganic particles			
			compound free of absorption increase during heating at 130-400°C	compound suffering absorption increase during heating at 130-400°C	amount (parts by weight) relative to 100 parts by weight of polymer	compound	amount (parts by weight) relative to 100 parts by weight of polymer	product name	type of inorganic particles	particle diameter (nm)	amount (parts by weight) relative to 100 parts by weight of polymer
Example 14	S	free-radical polymerized polymer	--	A-DMA	20	compound (1)	20	OptorakeTR-505	titanium oxide particles	10	140
Example 15	U	polyimide precursor	Zislizer O	--	2	compound (2)	20	OptorakeTR-502	titanium oxide composite particles	5	100
Comparative example 1	N	polyimide precursor	--	--	-	compound (1)	18	--	--	-	-
Comparative example 2	O	polyimide precursor	coumarin	--	0.5	compound (2)	20	OptorakeTR-502	tin oxide - titanium oxide composite particles	5	100
Comparative example 3	P	polyimide precursor	Zislizer O	--	61	compound (3)	19	OptorakeTR-505	titanium oxide particles	10	200
Comparative example 4	Q	polybenzoxazole precursor	coumarin-4	--	10	compound (2)	20	--	tin oxide particles	10	1200
Comparative example 5	R	polyimide precursor	--	--	-	compound (4)	24	OptorakeTR-503	silicon oxide - titanium oxide composite particles	8	290
Comparative example 6	T	polyimide precursor	--	--	-	compound (2)	20	OptorakeTR-502	tin oxide - titanium oxide composite particles	5	100

Table 3

	Evaluation Results						
	photosensitive resin composition			heat-resistant resin composition film			
	transmittance at 365nm (%)	photosensitivity	taper angle of developed pattern	transmittance at 400nm (%)	transmittance at 650nm (%)	taper angle of heat treated pattern	refractive index
Example 1	65%	+	62°	90%	91%	50°	1.73
Example 2	59%	+	60°	82%	93%	45°	1.74
Example 3	35%	+	55°	88%	95%	30°	1.76
Example 4	45%	+	64°	93%	92%	45°	1.81
Example 5	62%	+	53°	85%	90%	38°	1.78
Example 6	60%	+	61°	91%	94%	50°	1.77
Example 7	52%	+	58°	81%	90%	30°	1.80
Example 8	60%	+	62°	82%	93%	55°	1.73
Example 9	59%	+	48°	84%	90%	35°	1.79
Example 10	65%	+	40°	87%	92%	24°	1.78
Example 11	66%	+	64°	80%	95%	50°	1.74
Example 12	67%	+	53°	81%	97%	35°	1.77
Example 13	68%	+	57°	88%	92%	30°	1.74
Example 14	45%	+	53°	70%	52%	35°	1.75
Example 15	65%	+	63°	85%	94%	50°	1.75
Comparative example 1	67%	+	85°	88%	95%	78°	1.61
Comparative example 2	81%	+	95°	91%	94%	90°	1.76
Comparative example 3	10%	- (scum found)	-	92%	96%	-	1.78
Comparative example 4	68%	- (scum found)	-	89%	96%	-	1.82
Comparative example 5	81%	+	84°	88%	90%	80°	1.80
Comparative example 6	82%	+	82°	88%	90%	75°	1.74